



Please type a (+) inside this box →



PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 3

Complete if Known

Application Number	09/760,380
Filing Date	January 16, 2001
First Named Inventor	Bernard BELLEAU et al.
Group Art Unit	Not Yet Assigned 1624
Examiner Name	Not Yet Assigned McKee
Attorney Docket Number	IAF-1/2 C11

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
TKM		5,914,400	544	Liotta et al.	06-22-99	
		5,763,606	544	Mansour et al.	06-09-98	
		5,466,806	544	Belleau et al.	11-14-96	
		5,210,085	514	Liotta et al.	05-11-93	
		5,204,466	544	Liotta et al.	04-20-93	
		4,415,573	514	Ochi et al.	11-15-83	
		3,328,388	260	Shen et al.	06-27-67	
		5,684,164	549	Belleau et al.	11-04-97	
		5,041,449	514	Belleau et al.	08-20-91	

FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ₆
		Office ³	Number ⁴	Kind Code ⁵ (if known)				
TKM		EP	0 071 926			07-31-82		
		EP	0 337 713			10-18-89		
		EP	0 382 526			02-08-90		
		EP	0 515 156			05-20-92		
		EP	0 515 157			05-20-92		
		WO	90/01492			02-22-90		
		WO	91/11186			08-08-91		
		WO	91/17159			11-14-91		
		WO	92/10496			06-25-92		
		WO	92/10497			06-25-92		
		WO	92/14729			09-03-92		
		WO	92/14743			09-03-92		
		WO	92/18517			10-29-92		
		WO	92/19246			11-12-92		
		WO	92/20669			11-26-92		
		WO	92/20696			11-26-92		
		WO	94/14802			07-07-94		

Examiner
Signature

Thomas McKee

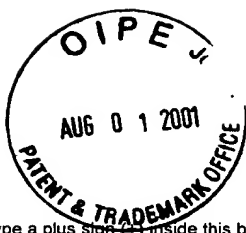
Date
Considered

5/24/02

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Please type a plus sign (+) inside this box → ☐

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 2 of 3

Complete if Known

Application Number	09/760,380
Filing Date	January 16, 2001
First Named Inventor	Bernard BELLEAU et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	IAF-1/2 C11

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
TCA		J.W. Beach et al., "Synthesis of Enantiomerically Pure (2'R,5'S)-(-)-1-[2-(Hydroxymethyl)oxathiolan-5-yl]cytosine as a Potent Antiviral Agent Against Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV)", J.Org.Chem., Vol. 57, pp. 2217-2219 (1992)	
		B.R. Belleau, et al., "Oxidative Degradation of L-Ascorbic Acid Acetals to 2',3'-Dideoxy-3'-Oxaribofuranosides. Synthesis of Enantiomerically Pure 2',3'-Dideoxy-3'-Oxacytidine Stereoisomers as Potential Antiviral Agents", Tetrahedron Lett., Vol. 33, pp. 6949-6952 (1992)	✓
		A.D. Borthwick et al., "Synthesis and Enzymatic Resolution of Carbocyclic 2'-Ara-fluoro-Guanosine: A Potent New Anti-Herpetic Agent", J.Chem. Soc. Chem.Comm., pp. 656-658 (1988)	
		C.K. Chu et al., "Asymmetric Synthesis of Enantiomerically Pure (-)-1-(1'R,4'R)-Dioxolane-thymine and Its Anti-HIV Activity", Tetrahedron Lett., Vol. 31, p. 3791-3794 (1991)	
		V. Farina et al., "A New Synthesis of 2',3'-Dideoxynucleosides for AIDS Chemotherapy", Tetrahedron Lett., Vol. 29, pp. 1239-1242 (1988)	
		B. Ganem, "Synthesis of Iso-ddA, Member of a Novel Class of Anti-HIV Agents; Dioxolane-T, A New 2',3'-Dideoxy-nucleoside Prototype with In Vitro Activity Against HIV", Chemtracts-Organic Chemistry, Vol. 3, pp. 249-251 (1990)	
		G. Hesse et al., "Mercapto-acetaldehyd und Dioxy-1,4-dithian", Chem.Ber., Vol. 85, pp. 924-932 (1952)	✓
		D.C. Humber et al., "Expedient Preparation of (-)-2'-Deoxy-3'-Thiacytidine (3TC)", Tetrahedron Lett., Vol. 33, pp. 4625-4628 (1992)	✓
		L.S. Jeong et al., "Asymmetric Synthesis and Biological Evaluation of β-L-(2R, 5S)- and α-L-(2R,5R)-1,3-Oxathiolane-Pyrimidine and -Purine Nucleosides as Potential Anti-Hiv Agents", J.Med.Chem., Vol. 36, pp. 181-195 (1993)	
		J.L. Kraus et al., "Synthesis of New 2,5-Disubstituted 1,3-Oxathilanes. Intermediates in Nucleoside Chemistry", Synthesis, pp. 1046-1048 (1991)	✓
		H.O. Kim et al., "Asymmetric Synthesis of 1,3-Dioxolane-Pyrimidine Nucleosides and Their Anti-HIV Activity", J.Med.Chem., Vol. 35, pp. 1987-1995 (1992)	
		J.M. McIntosh et al., "2-Mercaptoaldehyde Dimers and 2,5-Dihydrothiophenes From 1,3-Oxathiolan-5-ones", Can.J.Chem. Vol. 61, pp. 1872-1875 (1983)	
✓		D.W. Norbeck et al., "(±)-Dioxolane-T ((±)-1-[(2R,4R)-2-(hydroxymethyl)-4-dioxolanyl]thymine) A New 2',3'-Dideoxy-nucleoside Prototype With In Vitro Activity Against HIV", Tetrahedron Lett., Vol. 30, pp. 6263-6266 (1989)	

Examiner
Signature

[Handwritten Signature]

Date

Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Please type a plus sign (+) inside this box ☐

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 3 of 3

Complete if Known

Application Number	09/760,380
Filing Date	January 16, 2001
First Named Inventor	Bernard BELLEAU et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	IAF-1/2 C11

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
ger		M. Okabe et al., "Synthesis of the Dideoxynucleosides ddC and CNT from Glutamic Acid, Ribonolactone, and Pyrimidine Bases", J.Org.Chem., Vol. 53, pp. 4780-4786 (1988)	
		R.Storer, et al., "The Resolution And Absolute Stereochemistry of the Enantiomers of cis-1-[2-(Hydroxymethyl)-1,3-Oxathiolan-5-yl] Cytosine (BCH-189): Equipotent Anti-HIV Agents", Nucleosides & Nucleotides, Vol. 12, pp. 225-236 (1993)	
		E. Vedejs, et al., "Method for Sulfide S-Benzoylation or S-Allylation Using Trimethylsilyl Triflate Activated Benzyl or Allyl Ethers", J.Org.Chem., Vol. 46, pp. 3353-3354 (1981)	
		W-B. Choi et al., "In Situ Complexation Directs the Stereochemistry of N-Glycosylation in the Synthesis of Oxathiolanyl and Dioxolanyl Nucleoside Analogues", J. Am.Chem.Soc., Vol. 113, pp. 9377-9379 (1991)	
		W-B Choi et al., "Synthesis, Anti-Human Immunodeficiency Virus, and Anti-Hepatitis B Virus Activity of Pyrimidine Oxathiolane Nucleosides", Bioorg. & Med. Chem. Lett., Vol. 3(4), pp. 693-696 (1993)	
		C.K. Chu et al., "Enantiomeric Synthesis of (+)-BCH-189 [(+)-(2S,5R)-1-[2-(Hydroxymethyl)-1,3-oxathiolan-5-yl]cytosine] from D-Mannose and Its Anti-HIV Activity", J.Org.Chem., Vol. 56, pp. 6503-6505 (1991)	
		C.A. Evans et al., "Divergent Asymmetric Syntheses of Dioxolane Nucleoside Analogues", Tetrahedron Asymmetry, vol. 4(11), pp. 2319-2322 (1993)	
		P. Faury et al., "Synthesis of Tetrazole Oxathiolane Nucleoside Analogues and Their Evaluation as HIV-1 Antiviral Agents", Nucleosides & Nucleotides, Vol. 11(8), pp. 1481-1488 (1992)	
		L.S. Jeong et al., "An Efficient Synthesis of Enantiomerically Pure (+)-(2S,5R)-1-[2-(Hydroxymethyl)-1,3-Oxathiolan-5-yl]cytosine [(+)-BCH-189] from D-Galactose", Tetrahedron Lett., Vol. 33, pp. 595-598 (1992)	
		L.S. Jeong et al., "Structure-Activity Relationship of β -D-(2S,5R)- and α -D-(2S,5S)-1,3-Oxathiolanyl Nucleosides as Potential Anti-HIV Agents," J.Med.Chem., Vol. 36, pp. 2627-2638 (1993)	
		H. Jin et al., "Unexpected Effects of Lewis Acids in the Synthesis of Optically Pure 2'-Deoxy-3'-Oxayctidine Nucleoside Analogues", Tetrahedron Asymmetry, Vol. 4(2), pp. 211-214 (1993)	
		H.O. Kim et al., "Potent Anti-HIV and Anti-HBV Activities of (-)-L- β -Dioxolane-C and (+)-L- β -Dioxolane-T and Their Asymmetric Syntheses", Tetrahedron Lett., Vol. 33, pp. 6899-6902 (1992)	
		H.O. Kim et al., "1,3-Dioxolanylpyrimidine Nucleosides (2R,4R) and (2R,4S) with Selective Anti-HIV-1 Activity in Human Lymphocytes", J.Med.Chem., Vol. 36, pp. 30-37 (1993)	
		M.A. Siddiqui et al., "Antiviral Optically Pure Dioxolane Purine Nucleosides Analogues", Bioorg. & Med. Chem. Lett., Vol. 3(8), pp. 1543-1546 (1993)	
		L.J. Wilson et al., "The Synthesis and Anti-HIV Activity of Pyrimidine Dioxolanyl Nucleosides", Bioorg. & Med. Chem. Lett., Vol. 3(2), pp. 169-174 (1993)	
		R.J. Fessenden et al., Organic Chemistry, (Willard Grant Press, Boston), p. 633 (1983)	
		Milton et al., "Enantioselective Enzymatic Synthesis of the Anti-viral Agent Lamivudine (3TC™)," Tetrahedron Letts., Vol. 36, pp. 6961-6964 (1995)	
		Jin et al., "Diastereoselective Synthesis of the Potent Antiviral Agent (-)-2'-Deoxy-3'-thiacytidine and Its Enantiomer," J.Org.Chem., 60, pp. 2621-2623 (1995)	

Examiner
Signature

Date
Considered

5/24/02

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.